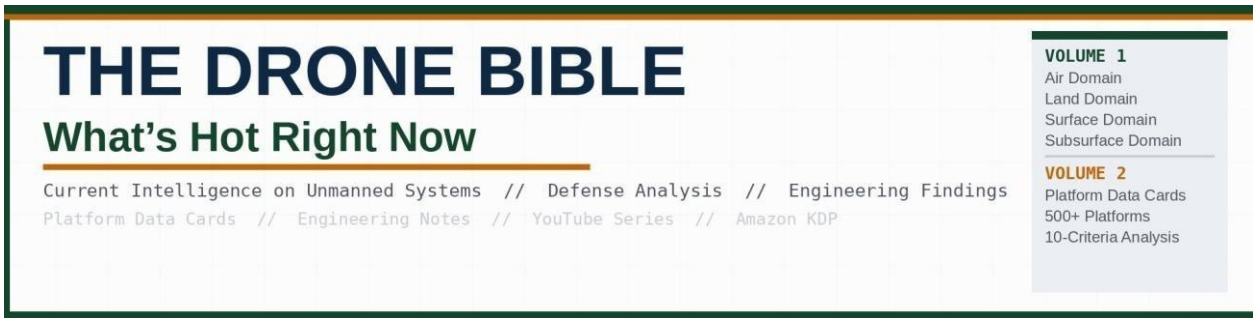


WHAT IS THE DRONE BIBLE?

A Defense Reference Work Unlike Any Other

Peter Brusso — Author, Engineer, Former Cruise Missile Program Developer

The Drone Bible is a two-volume defense reference work covering unmanned systems across every domain — air, land, surface water, and subsurface. It is not a catalog. It is not a photo book. It is an analytical reference built on a single premise: the line between drone and cruise missile has disappeared, and the defense establishment has not fully absorbed what that means.

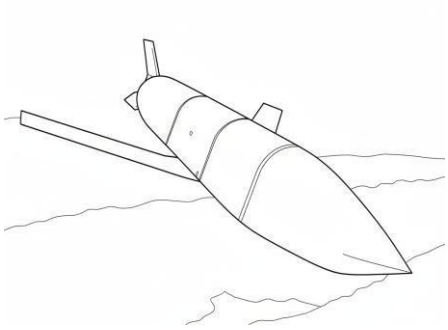
Volume 1 establishes the analytical framework — the convergence thesis, the platform taxonomy, the countermeasure architecture, and the cost-exchange mathematics that determine who wins and who runs out of interceptors first. Volume 2 is a platform data card catalog — over 500 platforms, each analyzed against 10 standardized criteria, each evaluated for countermeasure vulnerability, each placed on the drone-to-cruise-missile convergence spectrum.

The author spent years developing cruise missile programs — BGM-109 Tomahawk variants, the Advanced Cruise Missile, ducted-fan ISR vehicles. That engineering background is the lens through which every platform in this book is examined. When a $50,000 Iranian drone replicates what a $2 million Tomahawk was built to do, the author recognizes it — because he built the Tomahawk.

“The convergence is not a prediction about where the technology is going. It is a description of what already happened.”

■ WHAT’S HOT RIGHT NOW

Four Platforms Defining the Current Battlefield



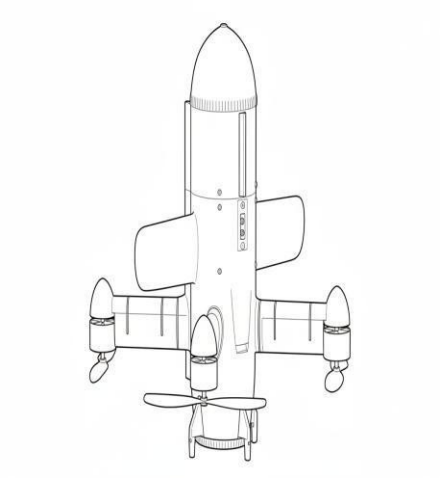
AGM-158 JASSM — The Western Benchmark

The Joint Air-to-Surface Standoff Missile is the Western answer to precision strike at standoff range.

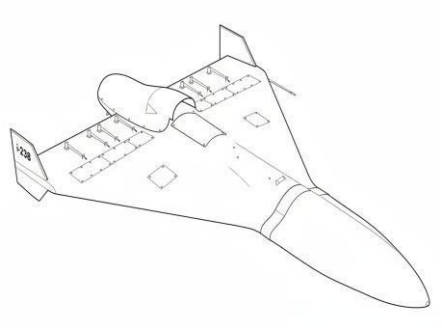
One thousand kilometer range. Stealth airframe. Autonomous terminal guidance. The platform every adversary air defense is designed to defeat — and the baseline against which every convergent drone platform is measured. Our most-watched video at 56 views.

Wild Hornets Sting — The Defender’s Answer

A nonprofit organization with 25 engineers and 3D printers built the most combat-proven interceptor drone in the world. Over



3,900 confirmed kills since May 2025. Unit cost $2,500. The Sting is the costexchange argument made physical — and it is the first platform in this book that shows the defender winning the economics.

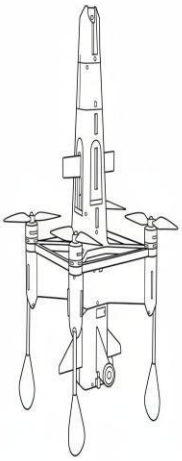


Shahed-238 / Geran-3 — The Convergence in Hardware

Iran called it a drone. Russia called it Geran-3. Every defense engineer who examines the specification sheet calls it a cruise missile. Jet propulsion. GPS/INS guidance. Multi-mode terminal seekers including antiradiation SEAD capability. 1,200 kilometer range. The convergence thesis is not theoretical. This platform is the evidence.

JEDI Shahed Hunter — The Next Architecture

Authorized by the Ukrainian Ministry of Defence on March 23, 2026. Radar-cued. Fully autonomous terminal intercept. No human pilot required. Euro 1,328 per unit on the Brave1 marketplace. One ground control station cues multiple simultaneous intercepts. The human pilot bottleneck that limits every other interceptor in the Ukrainian inventory is removed.



■ THE MASTER METRIC

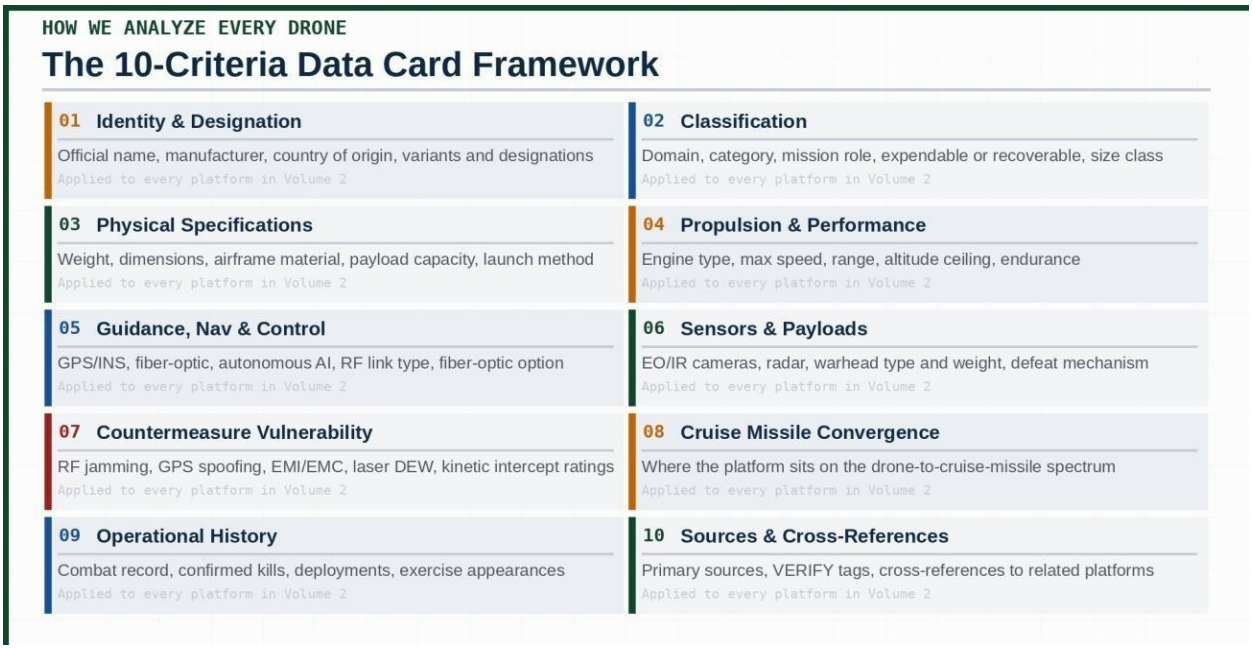
Cost-to-Kill: The Number That Ends the Debate

Every defense procurement decision comes down to one question: can you afford to win? A Patriot PAC-3 interceptor missile costs four million dollars. A Shahed-136 costs twenty to fifty thousand dollars. Every time Ukraine fires a Patriot to kill a Shahed, the attacker wins the economics by a factor of eighty to two hundred — even when the intercept succeeds. The Wild Hornets Sting costs twenty-five hundred dollars. At that price point the ratio inverts. The defender spends less per kill than the attacker spends per drone. That is the defender’s holy grail — cost-parity attrition — and Ukraine achieved it not with a billion-dollar procurement program but with a nonprofit, private donations, and a 3D printer.

> ⚠ ***ENGINEER NOTE:*** *I spent years working on systems where the cost asymmetry ran the other way — where the defender had the expensive weapon and the attacker exploited that. Watching Ukraine solve this problem from the bottom up, with commercial components and volunteer engineers, is the most significant development in defense economics I have seen in my career.*

HOW WE ANALYZE EVERY PLATFORM

The 10-Criteria Data Card Framework


HOW WE ANALYZE EVERY DRONE
The 10-Criteria Data Card Framework
01 Identity & Designation
Official name, manufacturer, country of origin, variants and designations
Applied to every platform in Volume 2
02 Classification
Domain, category, mission role, expendable or recoverable, size class
Applied to every platform in Volume 2
03 Physical Specifications
Weight, dimensions, airframe material, payload capacity, launch method
Applied to every platform in Volume 2
04 Propulsion & Performance
Engine type, max speed, range, altitude ceiling, endurance
Applied to every platform in Volume 2
05 Guidance, Nav & Control
GPS/INS, fiber-optic, autonomous AI, RF link type, fiber-optic option
Applied to every platform in Volume 2
06 Sensors & Payloads
EO/IR cameras, radar, warhead type and weight, defeat mechanism
Applied to every platform in Volume 2
07 Countermeasure Vulnerability
RF jamming, GPS spoofing, EMI/EMC, laser DEW, kinetic intercept ratings
Applied to every platform in Volume 2
08 Cruise Missile Convergence
Where the platform sits on the drone-to-cruise-missile spectrum
Applied to every platform in Volume 2
09 Operational History
Combat record, confirmed kills, deployments, exercise appearances
Applied to every platform in Volume 2
10 Sources & Cross-References
Primary sources, VERIFY tags, cross-references to related platforms
Applied to every platform in Volume 2

Every platform in Volume 2 is evaluated against the same 10 criteria. This consistency is what makes comparisons meaningful. You cannot compare a Wild Hornets Sting to a Patriot PAC-3 unless both are described in the same language, against the same metrics, with the same level of analytical rigor applied to each.

Criterion 7 — the countermeasure vulnerability profile — is the section most defense professionals find most immediately useful. It answers the operational question directly: how do you defeat this specific platform? RF jamming? GPS spoofing? EMI attack? Kinetic intercept?

The answer is different for every platform, and getting it wrong has consequences. Criterion 8 — the cruise missile convergence notes — is the section unique to this book. No other reference work places every drone on the drone-to-cruise-missile spectrum and explains precisely where it sits and why. That analytical placement is the lens through which the entire catalog should be read.

ENGINEERING FINDINGS

The Three-Source Problem

From the Engineering Notes series — Peter Brusso

THE THREE-SOURCE PROBLEM
Western Commercial Components Feeding Russian Weapons — Despite Sanctions
CZECH REPUBLIC
PBS TJ-150 Turbojet
• Powers the Geran-3 / Shahed-238
• Commercial aviation engine
• Acquired via sanction evasion
• Confirmed by wreckage analysis
SWITZERLAND
GPS / GNSS Modules
• Tallysman Wireless components
• Found in Lancet-3 teardown
• Export controls bypassed
• Despite active sanctions regime
UNITED STATES
AI Processors & FPGAs
• Intel, Texas Instruments chips
• American FPGA in Lancet-3
• Only Russian part: the battery
• Commercial supply chain failure
CHINA
Electronics & Motors
• Flight controllers and ESCs
• Battery cells and components
• Legal exports feeding weapons
• No effective interdiction

One of the most consistent findings across the entire platform catalog is a systematic violation of a principle I learned in cruise missile development: never rely on a single source for any critical component, and never allow a foreign single-source dependency in a weapon system's supply chain.

The Geran-3 — Russia's jet-powered Shahed variant that is functionally a cruise missile — is powered by a Czech commercial turbojet engine. The Lancet-3, Russia's most effective loitering munition against Ukrainian armor, contains a Swiss GPS module, an American AI processor, and an American FPGA. The only Russian-origin component in the Lancet-3 is the battery. Russia built its most effective battlefield weapons around components sourced from the countries opposing it — acquired through sanction evasion channels that the global commercial supply chain has no effective mechanism to close.

> ⚠ ***ENGINEER NOTE:*** *The three-source rule exists because single-source dependencies fail at the worst possible moment — under production pressure, when the program needs volume, when the component supplier faces its own constraints. Russia is learning this in real time. The Western defense establishment should be learning it proactively — before the next conflict begins.*

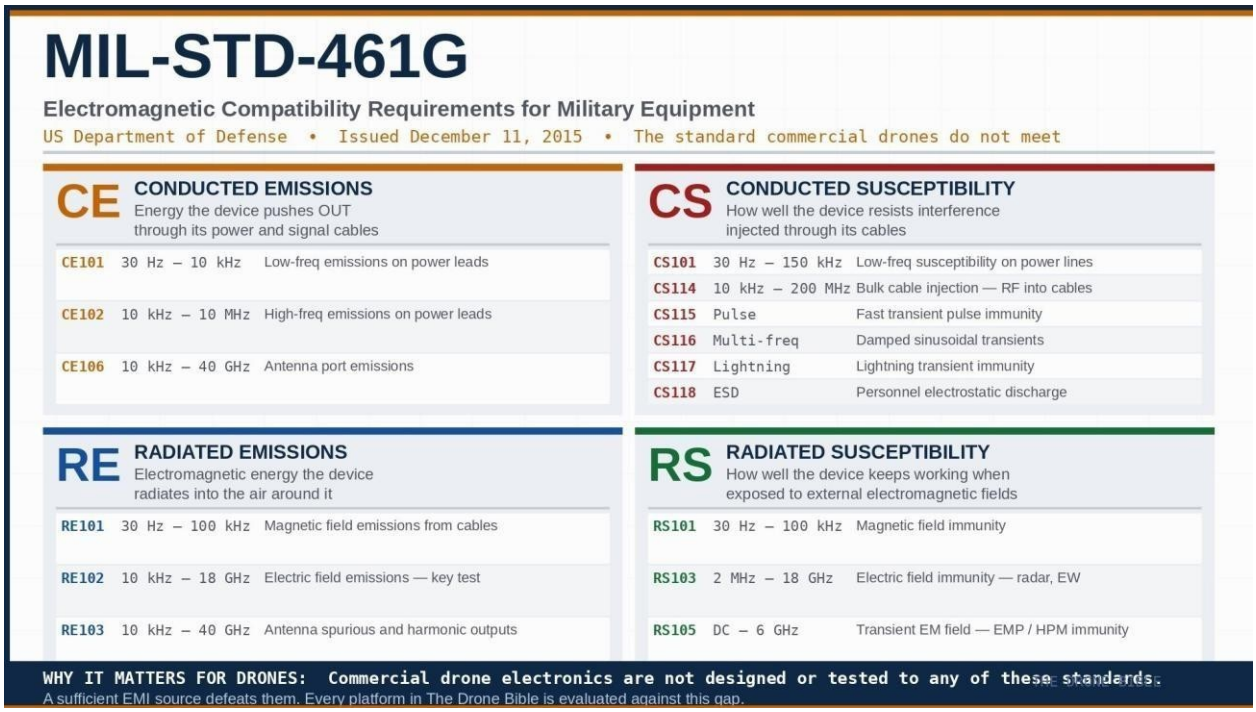
MOST SURPRISING FINDINGS

What Surprised a Cruise Missile Engineer

MOST SURPRISING FINDINGS
What Surprised a Cruise Missile Engineer
01 Three-Source Rule — Violated Everywhere
Almost every Russian weapon system analyzed contains Western commercial components acquired through sanction evasion. Czech engines. Swiss GPS. American
02 Nothing Hardened to MIL-STD-461G
Commercial and semi-commercial drones on both sides carry zero EMI/EMC hardening. The electromagnetic vulnerability gap is the most underexploited countermea
03 Dual-Domain Platforms Break Every Classification
The TJ-FlyingFish operates as an aerial drone AND an underwater vehicle mid-mission. A defender protecting against aerial threats has a completely different counter
04 No Drone Was Built to a Specification
Every platform we analyzed was built to solve one immediate tactical problem. Fast but blind at night. Stealthy but with a trivial warhead. Long range but unjammable

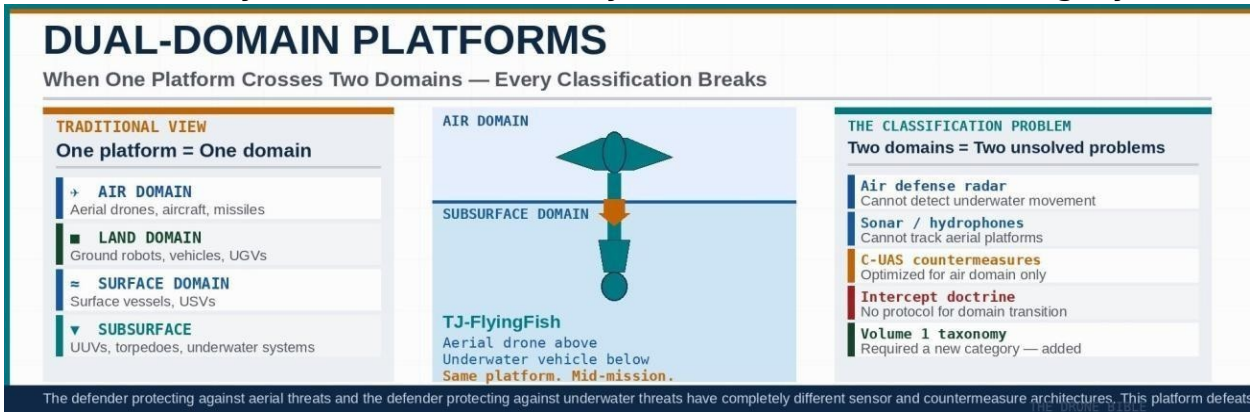
Nothing Is Hardened to MIL-STD-461G

Military Standard 461G defines the electromagnetic interference requirements for defense systems. It is the standard ensuring a military platform can survive the electromagnetic environment of the battlefield. Almost no commercial or semi-commercial drone meets it. That gap is the most underexploited countermeasure vector in modern drone warfare. Every platform in this book is evaluated against it.


MIL-STD-461G
Electromagnetic Compatibility Requirements for Military Equipment
US Department of Defense • Issued December 11, 2015 • The standard commercial drones do not meet
CE CONDUCTED EMISSIONS
Energy the device pushes OUT through its power and signal cables
CE101 30 Hz – 10 kHz Low-freq emissions on power leads
CE102 10 kHz – 10 MHz High-freq emissions on power leads
CE106 10 kHz – 40 GHz Antenna port emissions
CS CONDUCTED SUSCEPTIBILITY
How well the device resists interference injected through its cables
CS101 30 Hz – 150 kHz Low-freq susceptibility on power lines
CS114 10 kHz – 200 MHz Bulk cable injection — RF into cables
CS115 Pulse Fast transient pulse immunity
CS116 Multi-freq Damped sinusoidal transients
CS117 Lightning Lightning transient immunity
CS118 ESD Personnel electrostatic discharge
RE RADIATED EMISSIONS
Electromagnetic energy the device radiates into the air around it
RE101 30 Hz – 100 kHz Magnetic field emissions from cables
RE102 10 kHz – 18 GHz Electric field emissions — key test
RE103 10 kHz – 40 GHz Antenna spurious and harmonic outputs
RS RADIATED SUSCEPTIBILITY
How well the device keeps working when exposed to external electromagnetic fields
RS101 30 Hz – 100 kHz Magnetic field immunity
RS103 2 MHz – 18 GHz Electric field immunity — radar, EW
RS105 DC – 6 GHz Transient EM field — EMP / HPM immunity
WHY IT MATTERS FOR DRONES: Commercial drone electronics are not designed or tested to any of these standards.
A sufficient EMI source defeats them. Every platform in The Drone Bible is evaluated against this gap.

Dual-Domain Platforms Break Every Classification

The TJ-FlyingFish operates as an aerial drone and an underwater vehicle, transitioning between domains mid-mission. A defender protecting against aerial threats has a completely different sensor and countermeasure architecture than one protecting against underwater threats. A platform that crosses the air-water boundary mid-mission defeats both architectures simultaneously. The classification system needed a new category.


DUAL-DOMAIN PLATFORMS
When One Platform Crosses Two Domains — Every Classification Breaks
TRADITIONAL VIEW
One platform = One domain
AIR DOMAIN
Aerial drones, aircraft, missiles
LAND DOMAIN
Ground robots, vehicles, UGVs
SURFACE DOMAIN
Surface vessels, USVs
SUBSURFACE
UUVs, torpedoes, underwater systems
AIR DOMAIN
SUBSURFACE DOMAIN
TJ-FlyingFish
Aerial drone above
Underwater vehicle below
Same platform. Mid-mission.
THE CLASSIFICATION PROBLEM
Two domains = Two unsolved problems
Air defense radar
Cannot detect underwater movement
Sonar / hydrophones
Cannot track aerial platforms
C-UAS countermeasures
Optimized for air domain only
Intercept doctrine
No protocol for domain transition
Volume 1 taxonomy
Required a new category — added
The defender protecting against aerial threats and the defender protecting against underwater threats have completely different sensor and countermeasure architectures. This platform defeats

Few Drones Were Built to a Specification

This may be the most important finding in the book from a pure engineering standpoint. Every platform we analyzed was built to solve one immediate tactical problem. Fast but blind at night. Stealthy but with a trivial warhead. Long range but only unjammable at reduced speed. In cruise missile development, every program

starts with a formal specification document. The entire engineering effort flows from it. The drone world largely skipped that step. The result is a catalog of brilliant singleproblem solutions, and a conspicuous absence of anyone asking what the adjacent problems are. The next generation of drone programs — the ones that will define the battlefield of 2030 — will be built to specifications. This book is part of building those specifications.

THE FORWARD VIEW

Looking Through the Windscreen, Not the Mirror

THE FORWARD VIEW
Looking Through the Windscreen, Not the Rear-View Mirror
THE REAR-VIEW MIRROR
The Accountant's View
— Convergence already happened
— Document what was built
— Count the kills and costs
— Analyze the past
— Important — but it is history
VS
THE WINDSCREEN
The Entrepreneur's View
□ What does Ukraine build next?
□ Autonomous ecosystems at scale
□ Cost-parity attrition — achieved
□ AI pilots as standard components
□ Defender's holy grail — in reach

Everyone is talking about the convergence thesis. Drone technology converging with cruise missile capability. Commercial components enabling military-grade weapons. The cost floor collapsing. It is important analysis and this book documents it thoroughly.

But the convergence thesis is the rear-view mirror. It describes what already happened. Think of a household that needs to increase its income. The accountant looks at the spreadsheet and finds things to cut — important work, but it is backward-looking. The entrepreneur looks through the windscreen at where the road goes and figures out how to generate more income. The accountant and the entrepreneur are looking at the same household. They are not looking at the same future.

The forward view in drone warfare is the Ukrainian interceptor ecosystem — three different companies, three different architectures, all producing combat-proven platforms at under $2,500 per unit, all in the last twelve months. It is the autonomous AI pilot becoming a licensable software component any manufacturer can integrate. It is radar-cued autonomous intercept removing the human pilot bottleneck from the kill chain. It is cost-

parity attrition — the defender's holy grail — within reach for the first time in this conflict.

> *"The convergence is the rear-view mirror. Ukraine building an autonomous interceptor ecosystem at scale — that is the windscreen. That is where this book is looking."*

VIDEO SPOTLIGHT

Four Videos Worth Watching — Free on YouTube

Search "The Drone Bible" on YouTube • 25 platform videos published

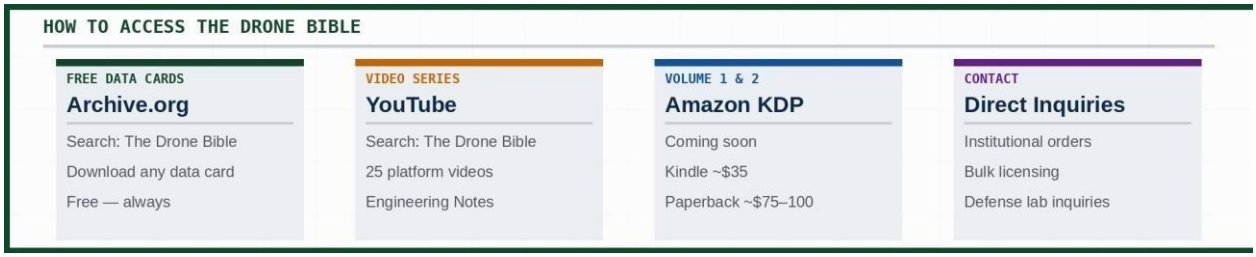
VIDEO SPOTLIGHT
Four Videos Worth Watching — Free on YouTube
AGM-158 JASSM
11:15 // 56 views
The Western precision strike benchmark. 1,000 km range. Stealth. Autonomous terminal. Top performer on the channel.
Wild Hornets Sting
7:33 // 4 views
Nonprofit. 25 engineers. 3D printers. Private donations. 3,900+ kills. $2,500 per unit. The defender's answer.
Shahed-238 / Geran-3
7:34 // 1 view
Iran called it a drone. Russia called it Geran-3. Engineers call it a cruise missile. They're right.
JEDI Shahed Hunter
NEW // Just published
Radar-cued. Autonomous. No human pilot. €1,328. MoD authorized Mar 23, 2026. The next architecture.

Each video accompanies a downloadable data card on Archive.org. Watch the video for the analytical narrative. Download the card for the technical reference. The two together give you more operational utility than either one alone.

AGM-158 JASSM (https://youtu.be/C8-lcwUdsXo) is the channel's top performer at 56 views in its first week — the Western precision strike audience is real and actively searching. Wild Hornets Sting (https://youtu.be/CMJUb_TMDJw) covers the nonprofit that built the world's most combatproven interceptor with private donations and 3D printers. Shahed-238 / Geran-3 (https://youtu.be/SWiHPCUX0wE) is the convergence thesis in hardware. JEDI Shahed Hunter (https://youtu.be/7ImivfiQ20s) — just published — is the first radar-cued fully autonomous interceptor in the Ukrainian inventory, authorized by the Ministry of Defence six days before this newsletter was written.

■ HOW TO ACCESS THE DRONE BIBLE

Free Data Cards, Videos, and Coming to Amazon



All platform data cards are available free on Archive.org. Search “The Drone Bible” and download any card. The full YouTube series is free to watch — subscribe to the channel to be notified when new platform videos and Engineering Notes are published.

Volume 1 and Volume 2 are in final production for Amazon KDP publication. Volume 1 establishes the analytical framework. Volume 2 is the platform data card catalog. Kindle pricing approximately $35. Paperback approximately $75–100. Institutional and bulk licensing inquiries welcome — the book has already attracted interest from defense laboratory researchers.

The Engineering Notes series — standalone analytical entries written from direct cruise missile engineering experience — are published on YouTube and Archive.org as companion content to the data cards. These entries draw on personal program experience that no other defense reference can provide.

THE DRONE BIBLE • What’s Hot Right Now

Archive.org • YouTube • Amazon KDP • Current Intelligence on Unmanned Systems

What Is Hot Right Now — And Why This Book Must Stay Evergreen This book has an original story worth telling.

It started on a hospital bed and a couch. As a wartime veteran confined to both, I spent the time watching YouTube — specifically, the Ukraine war. What I saw was a nation improvising under fire. Ukrainian soldiers were attaching hand grenades to commercial quadcopters. Then old Soviet-style mortars. A flying IED. I had seen that tactic before.

My historical research brought it back. ISIS in Iraq and Syria was the first to industrialize it.
Starting in 2014 they used consumer quadcopters — early DJI Phantoms — for reconnaissance. By October 2016 they had weaponized them, killing two Kurdish Peshmerga soldiers with a booby-trapped drone. By 2017, during the Battle of Mosul, they were running 60 to 100 drone strikes per month using modified quadcopters dropping 40mm grenades and mortar shells, with 3D-printed release mechanisms and stabilizing fins. An insurgent group with consumer electronics had created an industrial weapons program. Ukraine took that playbook and rewrote it.

Ukrainian manufacturers used 3D printers to build chassis and motor mounts. They reverseengineered what they had. When Russia deployed Iranian-built Shahed-136 drones — purchased specifically to strike Ukrainian cities — Ukraine got hold of an intact one. A British engineer examined the interior. The components were American, Swiss, and Czech. The only Russian-origin part was the battery. Russia had built its most effective weapon almost entirely from the components of the countries opposing it.

Then Russia quietly called its Chinese partners and asked them to stop selling DJI technology to Ukraine. The Chinese complied — and later applied the same restriction to the United States. The Ukrainians responded by reverse-engineering their remaining DJI drones and building their own. The three-source rule broken. The consequence paid. The lesson learned the hard way by everyone watching.

The production numbers tell the rest of the story. Ukraine produced approximately 5,000 drones in 2022. By 2024 that number was 4 million. The 2025 procurement target was 4.5 million FPV attack drones — $2.7 billion worth. The 2026 target is 7 million. Ukraine is roughly doubling production every year. For comparison, the United States produces approximately 100,000 combat drones per year. Ukraine produces more

than that every month. Which brings us to what is actually hot right now — and why this newsletter will keep publishing.

At 4.5 million drones per year you do not have enough pilots. One drone, one pilot, one mission at a time does not scale to that volume. The concept of a human in the kill loop — a trained operator directing every intercept, every strike, every reconnaissance sortie — requires a rethink at industrial scale. Someone has figured out what must be done. In the next issue we will tell you exactly who, and exactly how they are solving it. It will be, once again, a game changer.

How This Project Stays Evergreen

That couch and hospital bed produced something else besides this book. Every session of research turned up five to ten platforms I had never heard of. The drone battlefield is not static — it compounds. Two volumes cannot hold it.

Here is how we solved that problem. Volume 1 gives you the analytical foundation — the convergence thesis, the taxonomy, the countermeasure framework, the cost-exchange mathematics. Read it once and you have the lens through which every drone platform makes sense. Volume 2 gives you the catalog — 500-plus platforms analyzed against the same 10 criteria, evaluated for countermeasure vulnerability, placed on the convergence spectrum.

But Volume 2 will be out of date the week it prints. Every defense analyst knows this problem. Here is our answer.

Every new platform we find after publication gets its own individual data card — the same 10criteria analysis, the same format, the same countermeasure vulnerability profile. That data card is available for free download on Archive.org. A companion video on YouTube walks through the platform analysis in the same voice as the book. The data cards and videos are free. They are permanent. They accumulate. The book is the foundation. Archive.org and YouTube are the living update layer built on top of it.

You do not need to buy a new edition. You download the card. You watch the video. The Drone Bible stays current because the platform analysis never stops.

Stay with us.